UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>10 February 2006</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-24</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-24</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>18 March 2008</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>02/10/2006</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 10-15 are rejected under 35 U.S.C. 102(b) as being anticipated by

Nakatsu (US 5535244).

3. As per claim 10, Nakatsu teaches apparatus for use in hierarchical

modulation, the apparatus comprising: a hierarchical modulator for

modulating at least a first signal and a second signal to provide a

hierarchical modulation signal (Nakatsu, Col 6 L51 "modulator", Fig. 7, Col

11 L59-67); wherein the hierarchical modulation signal comprises a

sequence of symbols selected from a radial-type constellation of symbols

(Nakatsu, Col 6 L51 "modulator", Fig. 7, Col 11 L59-67).

4.   As per claim 11, Nakatsu teaches the apparatus of claim 10, further

comprising an up-converter for transmitting the hierarchical modulation

signal (it is well known in the art modulated signals needs to up-converted before transmission).

5.   As per claim 12, Nakatsu teaches the apparatus of claim 10, wherein the radial-type constellation of symbols comprises a number of symbols arranged in a signal space comprising four quadrants, wherein the symbols in a quadrant are arranged such that for every symbol lying on a circumference of a circle at least one other symbol lies on a radial of the circle such that the radial also intersects the symbol on the circumference (Nakatsu, Col 6 L51 "modulator", Fig. 7, Col 11 L59-67).

6.   As per claim 13, Nakatsu teaches the apparatus of claim 12, wherein the hierarchical modulator adjusts a separation distance, D, between a circumference symbol and a radial symbol (Nakatsu, Col 6 L51 "modulator", Fig. 7, Col 11 L59-67).

7.   As per claim 14, Nakatsu teaches the apparatus of claim 10, wherein the radial-type constellation of symbols comprises a number of symbols arranged in a signal space comprising four quadrants, wherein the symbols in a quadrant are arranged such that for every symbol lying on a circumference of a circle at least one other symbol lies substantially on a

radial of the circle such that the radial also intersects the symbol on the circumference (Nakatsu, Col 6 L51 "modulator", Fig. 7, Col 11 L59-67).

8.   As per claim 15, Nakatsu teaches the apparatus of claim 14, wherein the hierarchical modulator adjusts a separation distance, D, between a circumference symbol and a radial symbol (Nakatsu, Col 6 L51 "modulator", Fig. 7, Col 11 L59-67).

9.   **Claims 16-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Markarian (EP 1065854 A2).**

10.   As per claim 16, Markarian teaches apparatus for use in hierarchical modulation, the apparatus comprising (Markarian, Para [0004]): an upper level (UL) encoder for providing a UL encoded signal (Markarian, Fig.1 item 10, 12); a lower level (LL) encoder for providing a LL encoded signal (Markarian, Fig.1 item 14); and a hierarchical modulator responsive to the UL encoded signal and the LL encoded signal for providing a sequence of symbols for transmission (Markarian, Fig.1 item 38); wherein the hierarchical modulator selects the symbols from a radial-type signal constellation that is a combination of a quadrature phase shift keying

(QPSK) symbol constellation and a binary phase shift keying (BPSK) symbol

constellation (Markarian, Fig.1 item 10, 12, 14, 38).

11.   As per claim 17, Markarian teaches apparatus for use in a receiver, the

apparatus comprising: a down-converter for providing a received signal (it

is well known in the art a received signal is down converted); and a

hierarchical demodulator that processes the received signal by using a

radial-type constellation of symbols for recovery of upper layer (UL) data

and lower layer (LL) data (Markarian, Para [0004], Fig.8 item 203, item 208

"QPSK" 270 "BPSK").

12.   As per claim 18, Markarian teaches the apparatus of claim 17, wherein

the radial-type constellation of symbols is a combination of a quadrature

phase shift keying (QPSK) symbol constellation and a binary phase shift

keying (BPSK) symbol constellation (Markarian, Para [0012] "BPSK"

"QPSK", Fig. 7 item "Constellation B" –wherein arranged in a radial-type).

13.   As per claim 19, Markarian teaches the apparatus of claim 17, wherein

the radial-type constellation of symbols comprises a number of symbols

arranged in a signal space comprising four quadrants, wherein the symbols

in a quadrant are arranged such that for every symbol lying on a

circumference of a circle at least one other symbol lies on a radial of the

circle such that the radial also intersects the symbol on the circumference

(Markarian, Para [0012] "BPSK" "QPSK", Fig. 7 item "Constellation B" –

wherein arranged in a radial-type).

14.   As per claim 20, Markarian teaches the apparatus of claim 17, wherein

the radial-type constellation of symbols comprises a number of symbols

arranged in a signal space comprising four quadrants, wherein the symbols

in a quadrant are arranged such that for every symbol lying on a

circumference of a circle at least one other symbol lies substantially on a

radial of the circle such that the radial also intersects the symbol on the

circumference (Markarian, Para [0012] "BPSK" "QPSK", Fig. 7 item

"Constellation B" –wherein arranged in a radial-type).

15. As per claim 21, Markarian teaches apparatus for use in a receiver, the

apparatus comprising: a down-converter for providing a received signal (it

is well known in the art a received signal is down converted); and a

hierarchical demodulator for processing the received signal for recovering

upper layer (UL) data and lower layer (LL) data; wherein the received signal

represents a sequence of symbols selected from a radial-type constellation

of symbols (Markarian, Para [0004], Fig.8 item 203, item 208 "QPSK" 270 "BPSK").

16.   As per claim 22, Markarian teaches the apparatus of claim 21, wherein the radial-type constellation of symbols comprises a number of symbols arranged in a signal space comprising four quadrants, wherein the symbols in a quadrant are arranged such that for every symbol lying on a circumference of a circle at least one other symbol lies on a radial of the circle such that the radial also intersects the symbol on the circumference (Markarian, Para [0012] "BPSK" "QPSK", Fig. 7 item "Constellation B" – wherein arranged in a radial-type).

17.   As per claim 23, Markarian teaches the apparatus of claim 21, wherein the radial-type constellation of symbols comprises a number of symbols arranged in a signal space comprising four quadrants, wherein the symbols in a quadrant are arranged such that for every symbol lying on a circumference of a circle at least one other symbol lies substantially on a radial of the circle such that the radial also intersects the symbol on the circumference (Markarian, Para [0012] "BPSK" "QPSK", Fig. 7 item "Constellation B" –wherein arranged in a radial-type).

18.   *"In re claim 1-7 Nakatsu discloses a method for use in hierarchical modulation because under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claims, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324,231 MPEP 2112.02"*

19.   *"In re claim 8-9 Markarian discloses a method for use in hierarchical modulation because under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claims, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324,231 MPEP 2112.02"*

20.   In-reclaim 24 similarly analyzed as claims 16.

Conclusion

21.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZEWDU KASSA whose telephone number is (571)270-5253. The examiner can normally be reached on Monday - Friday (7:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571 272 3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

zk

/David C. Payne/
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